



(12) **EUROPEAN PATENT APPLICATION**

(21) Application number : **92306944.7**

(51) Int. Cl.⁵ : **G06F 3/12**

(22) Date of filing : **30.07.92**

(30) Priority : **29.08.91 US 752155**

(43) Date of publication of application :
03.03.93 Bulletin 93/09

(84) Designated Contracting States :
DE FR GB IT

(71) Applicant : **XEROX CORPORATION**
Xerox Square
Rochester New York 14644 (US)

(72) Inventor : **Rosekrans, Steven V.**
915 Blossom Road
Rochester, NY 14610 (US)
Inventor : **Bellucco, Thomas M.**
148 Kircher Park
Webster, NY 14580 (US)
Inventor : **Catapano, Sharon A.**
1283 Conifer Cove Lane
Webster, NY 14580 (US)

Inventor : **DiProspero, Joseph A.**
34 Cobblefield Way
Pittsford, NY 14534 (US)
Inventor : **Fedele, Samuel A.**
47 Westfield Commons
Rochester, NY 14625 (US)
Inventor : **Frumusa, Lawrence P.**
40 Woodfield Drive
Webster, NY 14580 (US)
Inventor : **Fuller, David C.**
45 Thompson Road
Rochester, NY 14623 (US)
Inventor : **Sobel, Elliot J.**
444 River Heights
Rochester, NY 14612 (US)
Inventor : **Zingo, Suzanne M.**
1 Braunston Drive
Fairport, NY 14450 (US)

(74) Representative : **Goode, Ian Roy et al**
Rank Xerox Patent Department Albion House
55 New Oxford Street
London WC1A 1BS (GB)

(54) **Dialog filtering.**

(57) A network printing system have plural printers for making prints, with some of the printers having different job processing capabilities; plural client inputs providing electronic documents and printing instructions that comprise each print job; and dialog filtering to enable the program selections on a universal job ticket to be edited in accordance with the processing capabilities of each individual printer.

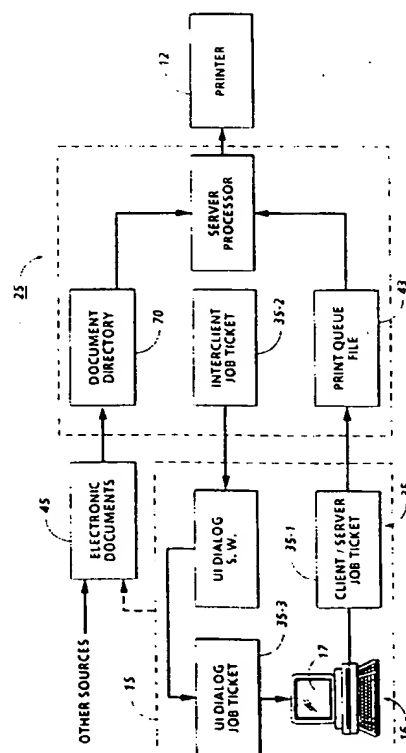


FIG. 2

The invention relates to network printing systems, and more particularly, to a dialog filtering system for such systems enabling use of a common job ticket throughout the system.

Network printing systems typically combine a number of client inputs such as workstations, personal computers, and the like with one or more printer outputs through a network. In systems of this type, a client at one of the inputs sends the electronic documents that comprise a job over the network to one of the printers selected for printing the job.

Systems by their very nature are based on a collection or assemblage of different components and thus network printing systems can have a mix of input and output types, with consequent lack of compatibility between the system parts.

In using a network printing system, the client must also provide job programming instructions which in effect tell the printer that has been selected how to process the electronic documents that comprise the job. One desirable way of doing this is to use an electronic job ticket that is displayed on the screen of the client's User Interface. Using a mouse, keyboard, etc., the client selects from the menu of options in the job ticket displayed on the screen the choices that he desires.

However, as discussed above, network systems consist of discrete and often different inputs and outputs, with differing processing abilities and limitations. Thus, one printer output may offer a wide variety of printing selections while a second printer in the same network system may have only a very limited number of choices. As a result, it is necessary that systems of this type have different and special job tickets for each different input/printer output combination.

In the prior art, US-A-4,970,554 to Rourke discloses a job processing system for electronic copying/printing systems in which an electronic job ticket displayed on the screen of an input station and displaying job programming selections is used to create a hard copy job ticket for assemblage with the hard copy documents that comprise the print jobs. At the printer, the job ticket is scanned by a document scanner and the job printing instructions obtained. US-A-4,852,019 to Vinberg et al discloses a system for retrieving stored graphics using a central processor to create and translate graphical information into a variety of formats which different users can access. US-A-4,754,428 to Schultz et al discloses an apparatus and method for distributing documents to remote terminals with different formats wherein a document is converted into a common format prior to transmission over a communication link. And, US-A-4,651,278 to Herzog et al discloses an interface process for an all-points addressable printer wherein a printer is connected to a host application program which can be present on a number of different computer systems,

while US-A-4,649,513 to Martin et al discloses a system for processing printing data on a single printer wherein each page has a page definition (PAGEDEF) file attached to it containing the page format commands for the particular page.

In contrast, the present invention provides a process for filtering the job programming dialog displayed on the screens of the user interfaces associated with the clients of a network printing system having plural printers, the printer having print queues for selection of a printer by the clients; and a server for transmitting print jobs comprising electronic documents and printing instructions from the clients to the printers, comprising the steps of: providing a common electronic job ticket having a first binary inter-client protocol format and a second client-server protocol format for use by the clients in programming printing instructions for print jobs; providing a printer user interface mask file for each of the printers identifying the programming selections available with each individual print queues; on selection of one of the print queues by one of the clients for printing a print job, accessing the printer user interface mask file for the one print queue; masking the first job ticket format with the printer user interface mask file for the one print queue to convert the common job ticket to a special job ticket with programming selections limited to selections available on the one print queue; using the first job ticket format, displaying the special job ticket on the user interface screen of the one client to enable the one client to generate the second job ticket format with printing instructions for printing the one print job; and transmitting the second job ticket format with the printing instructions for the print job to the selected print queue for printing the electronic documents comprising the print job on the printer associated with the selected print queue.

According to another aspect of the invention there is provided a dialog filtering process for a printing system to filter out non-selectable print programming selections, said system including plural virtual printers for making prints, at least one print queue associated with each of said printers for accessing said printers, plural clients for inputting printing selections for print jobs, said clients including a user interface for entering printing selections and a display screen for displaying said printing selections, each of said print jobs comprising electronic documents and the printing selections for printing the print job on one of said printers; a server for distributing said print jobs to the print queue selected for printing by the printer associated with said print queue; and a network coupling said clients, printers, and server, comprising the steps of: (a) providing a common electronic job ticket for said printing system for use in programming said print jobs (b) in response to selection of one of said print queues by one of said clients, filtering the printing selections provided by said job ticket to provide a

modified electronic job ticket with printing selections limited to the printing selections provided by said one print queue; (c) displaying said modified job ticket on the screen of said one client for input of printing selections for said job; and (d) following input of said printing selections for said print job, transmitting said job ticket with said printing selections to said server for printing said print job on the printer associated with said one print queue.

The process preferably includes the steps of providing a client-server format for said electronic job ticket; and using said client server job ticket format to transmit said printing selections for said print job to said server. The process preferably includes the steps of: providing a dialog display format for said job ticket; and using said dialog display job ticket format to display said modified job ticket on said one client screen.

The process preferably includes the steps of: providing a printer mask for each of said print queues reflecting the printing selections provided by each of said print queues; and in response to selection of said one print queue, using the printer mask for said one print queue to filter said common job ticket and provide said modified job ticket. The process also preferably includes the steps of: providing a binary inter-client format and a client-server format for said job ticket; and using said inter-client format of said modified job ticket to display said modified job ticket on said one client screen.

The process may include the step of: dimming printing selections on said modified job ticket displayed on said one client screen that are unavailable, or step of: deleting printing selections on said modified job ticket displayed on said one client screen that are unavailable.

The process in the case where said system printers include plural printer families, the steps of: providing a family mask for each of said printer families; providing a printer configuration file for each printer in each of said printer families; and combining said family mask and said printer configuration mask for each of said printers in each of said printer families to provide said printer mask for each of said printers.

The process may include the steps of: generating the printing selections for said print job on said client-server format of said modified job ticket; and transmitting said client-server job ticket with said printing selections to said server for printing by said one printer.

According to a further aspect of the invention there is provided a process for filtering a job programming dialog displayed on the screens of the user interfaces associated with the workstation clients of a network printing system, said system having plural printers and a server for transmitting print jobs consisting of electronic documents and print program selections from said clients to said printers for printing,

comprising the steps of: (a) providing at least one printer access queue with each of said printers; (b) providing a general electronic job ticket having a first binary inter-client format and a second client-server format for said printing system for entering print program selections from said clients to said printer access queues for said print jobs; (c) providing a printer user interface mask file for each of said printer access queues representing the print program selections available with individual ones of said printer access queues; (d) in response to selection of one of said printer access queues for a print job by one of said clients, masking said job ticket first format with the mask file for said one printer access queue to provide a modified electronic job ticket having print program selections limited to the programming selections associated with said one printer access queue; (e) from said first format of said modified job ticket, providing a third dialog display job ticket format for displaying the print program selections associated with said one printer access queue on said one client display screen; (f) at said one client user interface, entering print program selections for said print job to provide the second format of said modified job ticket with the print program selections for printing said print job; and (g) transmitting said second job ticket format with said print program selections for said print job to said server for printing said print job.

The process in this case preferably includes the step of: providing said electronic documents for said print job at said client.

The process in this case preferably includes the step of: providing said electronic documents for said print job at said server.

The process in this case preferably included the step of: dimming unavailable selections on said edited job ticket displayed on said screen.

Figure 1 is a schematic view of a network processing system incorporating the dialog filtering system of the present invention;

Figure 2 is a schematic view showing the elements that make up a print job for submission to the print server;

Figure 3 is view showing an example of the client server format of a job ticket;

Figure 4 is a view showing an example of the binary inter-client format of a job ticket;

Figure 5 is a view depicting an example of a job ticket used to program a print job as displayed on the screen of a client;

Figure 6 is a schematic view illustrating printer queue, mask file directory, and queue configuration files in the print server, with AND'ing of a UI mask file for the printer queue selected with the inter-client job ticket to provide a filtered job ticket for programming a job;

Figure 7 is a schematic view illustrating examples of dialog filtering as practiced by the present in-

vention to obtain a inter-client job ticket compatible with the printer queue selection; and Figure 8 is a view depicting examples of dialog filtering as practiced by the present invention.

As used herein, filtering is the process of applying the printer mask to the User Interface dialogs, while graying refers to a programming selection that is unavailable to the user based on the current mode. Dimming is a generic term used to identify a programming selection which is not available.

Referring to Figure 1, there is shown a network processing system 10 of the type adapted to incorporate the present invention. Processing system 10 comprises a plurality of printers 12-1, 12-2, 12-3, ... 12-n for processing print jobs and making prints in accordance with the job programming instructions for each job printed. Printers 12-1, 12-2, 12-3, ... 12-n may be any suitable printer capable of producing prints on a print media such as paper from video image signals and may, for example, comprise laser printers, ink jet printers, ionographic printers, etc. In system 10, where multiple printers are integrated into a network processing system, individual printers typically have different document processing capabilities as will appear. As used herein, printers 12-1, 12-2, 12-3, ... 12-n include virtual printers as discussed more fully hereinbelow.

System 10 provides print processing for various workstations or clients 15-1, 15-2, 15-3, ... 15-n. Clients 15-1, 15-2, 15-3, ... 15-n, which may be remote and/or on site, are operatively coupled to printers 12-1, 12-2, 12-3, ... 12-n through server 25 as will appear. Clients provide the electronic documents that are the source of the print jobs and for this purpose individual ones or all of clients 15-1, 15-2, 15-3, ... 15-n may have a document scanner, disk input, keyboard, fax, etc. for generating the electronic documents that comprise the job to be printed. Clients 15-1, 15-2, 15-3, ... 15-n have a User Interface (UI) 16 with interactive screen 17 enabling programming selections for print jobs to be made, screen 17 displaying the various programming selections available in the form of a job ticket as will appear. Printers 12-1, 12-2, 12-3, ... 12-n, clients 15-1, 15-2, 15-3, ... 15-n, and server 25 are operatively interconnected by network or communication channels 27.

Referring also to Figure 2, each print job consists of two principal components, image data representing the job being processed (referred to as electronic documents 45) and a job ticket 35. Job ticket 35 contains the programming parameters for the job such as quantity, plex, enlargement, reduction, stock, finishing, etc. while electronic documents 45 are the information that is ultimately printed on the print media, typically paper sheets.

Print queues 42-1, 42-2, 42-3, ... 42-n (also seen in Figure 6) are provided for selection by the user in a file 43 on server 25, each print queue 42 being as-

sociated with a specific one of the printers 12-1, 12-2, 12-3, ... 12-n. It is understood that there may be plural queues for the same printer as in the case where virtual printers are provided. For example, a printer (referred to herein as virtual printer) may be set up to provide different printer functions, with a corresponding print queue provided for each different printer set-up. For example, in printing systems such as system 10, a System Administrator of the type described more fully in EP-A-000000, corresponding to U.S. Application No. 591,330 to John L. Rourke and entitled "Security System for Electronic Printing Systems", filed on September 28, 1990, the disclosure of which is herein incorporated by reference, normally oversees the system, controlling use and access to the system by the different users. In that capacity, the System Administrator may set a system printer to provide different print options, for example, one with print options especially tailored to students, one for faculty, one for librarians, etc. Other virtual printer setups may be envisioned as, for example, virtual printers for different budget centers, locations, etc.

Referring also to Figures 3-5, to enable a user at one of clients 15-1, 15-2, 15-3, ... 15-n to program jobs, an electronic job ticket 35 is provided. Job ticket 35 has multiple formats including a client/server protocol job ticket 35-1 that provides the set of commands that are used to communicate the printing selections from the client 15-1, 15-2, 15-3, ... 15-n to server 25. Client/Server Job ticket 35-1 may, for example, be in ASCII format such as shown in Figure 3.

A second Job Ticket format is an inter-client protocol job ticket 35-2 (an example of which is shown in Figure 4) that enables a single communication interface between clients 15-1, 15-2, 15-3, ... 15-n. Inter-client Job ticket 35-2, which is held in the system memory of the client, is binary and provides values from a universal set of common defines used by all clients 15-1, 15-2, 15-3, ... 15-n. Since inter-client job ticket 35-2 is binary, it is not readable and is independent of all server interfaces.

To display Job Ticket 35 in a form that is readable by users on the screens 17 of the clients' User Interfaces 16, job ticket 35-2 is processed by the client UI interface dialog software to provide a UI dialog job Ticket 35-3 that displays the printing selections available to the user for programming a print job. An example of a UI Dialog Job Ticket 35-3 display is shown in Figure 5 of the drawings.

Referring also to Figure 6, prior to submission of a job for printing, the print queue 42-1, 42-2, 42-3, ... 42-n which services the printer 12-1, 12-2, 12-3, or ... 12-n where the job will be sent, is selected by the client requesting the job. Following this, the job ticket 35 for the job is programmed by the user at the client workstation. Following programming of the printing selections for the job, the client/Server Job Ticket 35-1 that is created is sent to the print queue 42-1, 42-

2. 42-3, ...42-n selected. The electronic documents 45 that comprises the document papers to be printed, which may reside at the client 15 itself, or in a directory on server 25, or elsewhere in system 10, are also obtained. Where the file 45 resides in server 25, the client/server job ticket 35-1 includes a reference to the file location. Alternately, the file 45 may be prepended to the PDL file. A server/processor in server 25 processes the electronic documents 45 for printing by the selected printer.

Since the various clients 15-1, 15-2, 15-3, ... 15-n of the system may differ in design, programming features, software, manufacturer, etc., the UI dialog job ticket 35-3 brought up and displayed on each client's screen 17 can be different than the job ticket displayed on the screen of the other clients. One notable difference is in the choice of printing selections. For example, the User Interface 16 of client 15-1 may display a job ticket offering a large selection of print stock size, type, and color to choose from, numerous enlargement/reduction choices, several finishing options such as binding, stapling, etc. whereas the job ticket displayed on another client 15-2 may offer only one or two stock size selections, one or two enlargement/reduction choices, no finishing, etc.

In a similar vein, the functions performed by the system printers 12-1, 12-2, 12-3, ... 12-n can differ from one another. For example, printer 12-1 may be a high speed fully featured printer offering a large selection of print stock size, type, and colors, several finishing choices, various image manipulation choices such as enlargements/reductions, image rotation, etc. while printer 12-2 may be less featured with only a few choices for print stock, no finishing, etc. Similarly, the feature sets provided by any virtual printers may differ.

Since the programming capabilities of the individual clients 15-1, 15-2, 15-3, ... 15-n and the print function of the individual printers 12-1, 12-2, 12-3, ... 12-n can differ, dialog filtering of the present invention serves to in effect match the programming abilities of the individual clients with the print functions of the print queue selected to print the job through the Job ticket 35. Dialog filtering provides the infrastructure that enables server 25 to handle a common binary inter-client job ticket 35-2 among multiple printers 12-1, 12-2, 12-3, ... 12-n. As will appear, dialog filtering is accomplished by applying a print mask (referred to hereinbelow as Print UI Mask file 55-1, 55-2, 55-3, ... 55-n), to the Inter-client Job Ticket 35-2 which is used by the User Interface dialogs of clients 15-1, 15-2, 15-3, ... 15-n to generate the UI Dialog Job Ticket 35-3 that is displayed on the client's UI screen 17.

Referring particularly to Figures 6 and 7, server 25 contains a number of configuration/setup files. These include UI Family Mask file 50, Printer Configuration file 52, and Queue Configuration file 54, the latter being a mapping between the print queue 42-1,

42-2, 42-3, ... 42-n for the printer selected and the corresponding Mask file 55-1, 55-2, 55-3, ... 55-n as will appear. UI Family Mask 50 is a single mask which reflects the full capability of a particular printer platform family. For example, printer 12-1 may be sold in a number of different configurations. However, the entire family or class of printer 12-1 is represented by a single universal UI Family Mask 50.

Printer Configuration file 52 comprises a file which reflects the actual configuration of a particular printer. File 52 is created based on input as to how the particular printer has been set up for example by the System Administrator.

During the installation process or at any other time when printers or virtual printers are set up, a Print UI Mask file 55-1, 55-2, 55-3, ... 55-n is generated for each printer using the Printer Configuration file 52 for that printer and the UI Family Mask file 50 for the same family of printers as a template. Printer UI Mask files 55-1, 55-2, 55-3, ... 55-n are held in a Mask file directory 56 in server 25, there being one Printer UI Mask file 55 for each print queue 42. Each print queue is logically associated with a print mask file. Several queues can and usually do point to the same print mask file.

Printer UI Mask files 55, which are used only by the client software, are binary files identical to the structure of the binary inter-client job ticket 35-2. Common defines identifying program selections common to all clients 15 are used, with data in the mask file organized so that each bit in a field, or multiple bits where the field contains numeric/text data, correspond to a potential selection. Fields in binary inter-client job ticket 35-2 can be either null or represent one selection out of a set. For example, in the imaging field, there are three commonly defined selections, one sided, two sided, and tumble duplex with corresponding hexadecimal values of 0x01, 0x02, and 0x04 respectively. In this example, the value 0x07 would indicate that all three options are enabled. The mask file on the other hand can have multiple bits set, each corresponding to an enabled option.

Once a client has selected a print queue 42-1, 42-2, 42-3, ... 42-n, the corresponding Printer UI Mask file 55 in directory 56 is identified through mapping by Queue Configuration file 54. Mask file 55 is applied to the binary inter-client job ticket 35-2 at the client 15-1, 15-2, 15-3, ... 15-n in an AND'ing process (represented by AND gate 60 in Figure 6). Substitution 62, which is the final step of the filtering process is carried out. As will appear, substitution may or may not be required. Following substitution, validation 64, which is the last step before the client/server ticket 35-1 is sent to server 25, is done. A UI dialog job ticket 35-3 is generated from the inter-client job ticket 35-2 as described for display of the job ticket program selections on the client's UI screen 17. When the print program selections are completed, the electronic

documents 45 for the print job are normally placed in a document directory 70 in server 25 while the client/server job ticket 35-1 is sent to the print queue 42 selected.

For substitution 62, the client's software code examines specific fields for a value of "0", "0" being a flag indicating that a substitution is needed. Where substitution is needed, a default setting is provided using the following relationship:

--in a field which is "0" in the inter-client job ticket 35-2, look at the same field in the Printer UI mask 55 and substitute the least significant bit which is set--.

Referring to Figure 8, an example of substitution 62 is there shown. In this example, the inter-client job ticket 35-2 provides a selection for transparency stock (type-0x02L, binary00010) whereas the printer UI Mask file 55 for the printer selected at the same position indicates that transparency is not a permissible selection (type-0x1d, binary...011101). AND'ing printer UI Mask file 55 for the print queue selected with job ticket 35-2 yields00000. Accordingly, the least significant bit (i.e., 01) of the printer UI Mask file is substituted to provide a different selection. In this example, 0x01, which corresponds to standard paper stock is the substitute or default selection.

In another example, the color selection provided by the binary inter-client job ticket 35-2 is: color-0x40L (which corresponds to the "Custom Color" selection in the common defines file), binary....01000000. The corresponding selection in the UI Mask file is: color 0x7fL, binary01111111. AND'ing results in binary.0010000 or the original 0x40L selection.

In the case of numeric/text such as Custom Color "Orange", the numeric/text letters (in this case, the text "Orange") are arbitrarily set at "1". Thus, the Custom Color selection is effectively not compared.

Validation 64 is a check to determine if the print program selections made are erroneous or incapable of being carried out. For example, a program selection of stapling as the finishing option in the case where only one sheet is being printed is deemed to be an error since single sheets are not stapled, selecting binding where the number of prints that comprise the book are greater than the maximum number of pages that can be bound at once is deemed to be a selection which the printer is incapable of carrying out since the selection exceeds the capability of the printer hardware, etc.

In cases where printers 12-1, 12-2, 12-3,...12-n differ in function, the programming dialogs for the job ticket 35 displayed on the clients' UI 16 must reflect this fact. To do this, the job programming selection(s) that are not available for the printer selected are identified as such by dimming the display for those unavailable selections. This may be effected by graying

the intensity of the display for each unavailable programming selection, blanking each unavailable programming selection out so as not to be visible at all, etc.

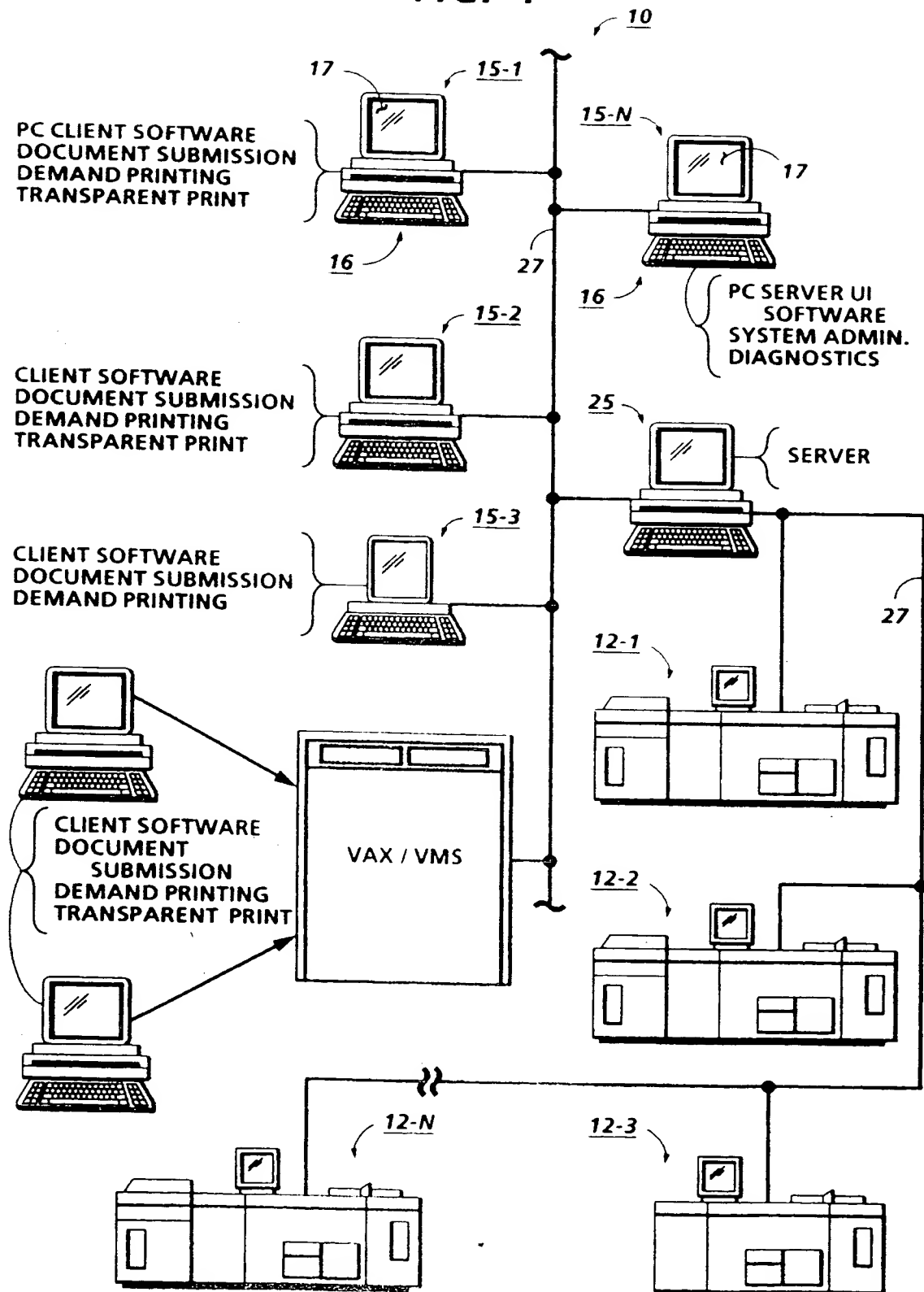
While the invention has been described with reference to the structure disclosed, it is not confined to the details set forth, but is intended to cover such modifications or changes as may come within the scope of the following claims.

Claims

1. A process for filtering the job programming dialog displayed on the screens (17) of the user interfaces (16) associated with the clients (15-1,...15-n) of a network printing system having plural printers (12-1...12-n), print queues (42-1, ...42-n) associated with each of said printers (12-1, ... 12-n) for selection of a printer by said clients; and a server (25) for transmitting print jobs comprising electronic documents (45) and printing selections from said clients (15-1, ... 15-n) to said printers (12-1, ... 12-n), comprising the steps of:
 - a) providing a common electronic job ticket (35) having a first binary inter-client protocol format (35-2) and a second client-server protocol format (35-1) for use by said clients (15-1,... 15-n) in programming printing selections for print jobs;
 - b) providing a printer user interface mask file (55-1, ...55-n) for each of said printers (12-1,... 12-n) identifying the printing selections available with each individual print queue (42-1,...42-n);
 - c) on selection of one (42) of said print queues (42-1,...42-n) by one of said clients (15-1, ... 15-n) for printing a print job, accessing the printer user interface mask file (55-1, ...55-n) for said one print queue (42);
 - d) masking said first job ticket format (35-2) with said printer user interface mask file (55-1,...55-n) for said one print queue (42) to convert said common job ticket (35) to a special job ticket (35-3) with printing selections limited to printing selections available for said one print queue (42);
 - e) using said first job ticket format (35-2), displaying said special job ticket (35-3) on the user interface screen (17) of said one client (15) to enable said one client to generate said second job ticket format (35-1) with printing selections for printing said one print job; and
 - f) transmitting said second job ticket format (35-1) with said printing selections for said print job to said one print queue (42) for printing the electronic documents (45) comprising said print job on the printer (12) associated with said one print queue (42).

2. The process according to claim 1 including the step of:
 obtaining said electronic documents (45) for said print job from said client (15).
3. The process according to claim 1 or 2 including the step of:
 obtaining said electronic document (45) for said print jobs from said server (25).
4. The process according to claim 1 or 2 including the step of:
 appending said electronic documents (45) for said print job to said second job ticket format (35-1).
5. The process according to any of claims 1 to 4 including the steps of:
 masking unavailable printing selections on said special job ticket (35-3); and
 deleting said masked printing selections from said special job ticket (35-3).
6. The process according to any of claims 1 to 4 including the steps of:
 masking unavailable printing selections on said special job ticket (35-3); and
 dimming said masked printing selections on said special job ticket (35-3).
7. The process according to any of claims 1 to 6 including the step of:
 where a printing selection on said common job ticket (35) is different from the corresponding printing selection available with said one print queue (42), changing said printing selection on said special job ticket (35-3) to a default printing selection.
8. The process according to claim 1 including the steps of:
 providing a user interface family mask (50) generic to all of said printers (12-1,... 12-n) in the same family;
 providing a printer configuration file (52) for each of said print queues (41-1,...42-n) identifying the current setup of the printer (12) represented by each of said print queues (41-1, ...42-n); and
 combining said family mask (50) and said configuration file (52) to provide said printer user interface mask file (55-1,...55-n) for each of said print queues (42-1,...42-n).
9. A dialog filtering process for a printing system to filter out non-selectable print programming selections, said system including plural non-selectable print programming selections, said system including plural virtual printers (12-1,...12-n) for making prints, at least one print queue (42-1, 42-n) associated with each of said printers (12-1,...12-n) for accessing said printers (12-1,...12-n), plural clients (15-1,...15-n) for inputting printing selections for print jobs, said clients (15-1, ...15-n) including a user interface (16) for entering printing selections and a display screen (17) for displaying said printing selections, each of said print jobs comprising electronic documents (45) and the printing selections for printing the print job on one of said printers; a server (25) for distributing said print jobs to the print queue (42) selected for printing by the printer (12) associated with said print queue (42); and a network (27) coupling said clients, printers, and server, comprising the steps of:
 a) providing a common electronic job ticket (35) for said printing system for use in programming said print jobs;
 b) in response to selection of one of said print queues (42) by one of said clients (15), filtering the printing selections provided by said job ticket (35) to provide a modified electronic job ticket (35-3) with printing selections limited to the printing selections provided by said one print queue (42);
 c) displaying said modified job ticket (35-3) on the screen (17) of said one client (15) for input of printing selections for said job; and
 d) following input of said printing selections for said print job, transmitting said job ticket (35) with said printing selections to said server (25) for printing said print job on the printer (12) associated with said one print queue (42).
10. The process according to claim 9 including the steps of:
 providing an inter-client format (35-2) for said electronic job ticket (35); providing a mask file (55-1, ...55-n) for each of said print queues (42-1, ...42-n) identifying the individual printing selections of each said print queues (42-1,... 42-n); and
 on selection of one of said print queues (42), masking said inter-client job ticket format (35-2) with said mask file (55), for said one print queue (42) to provide said modified job ticket (35-3).

FIG. 1



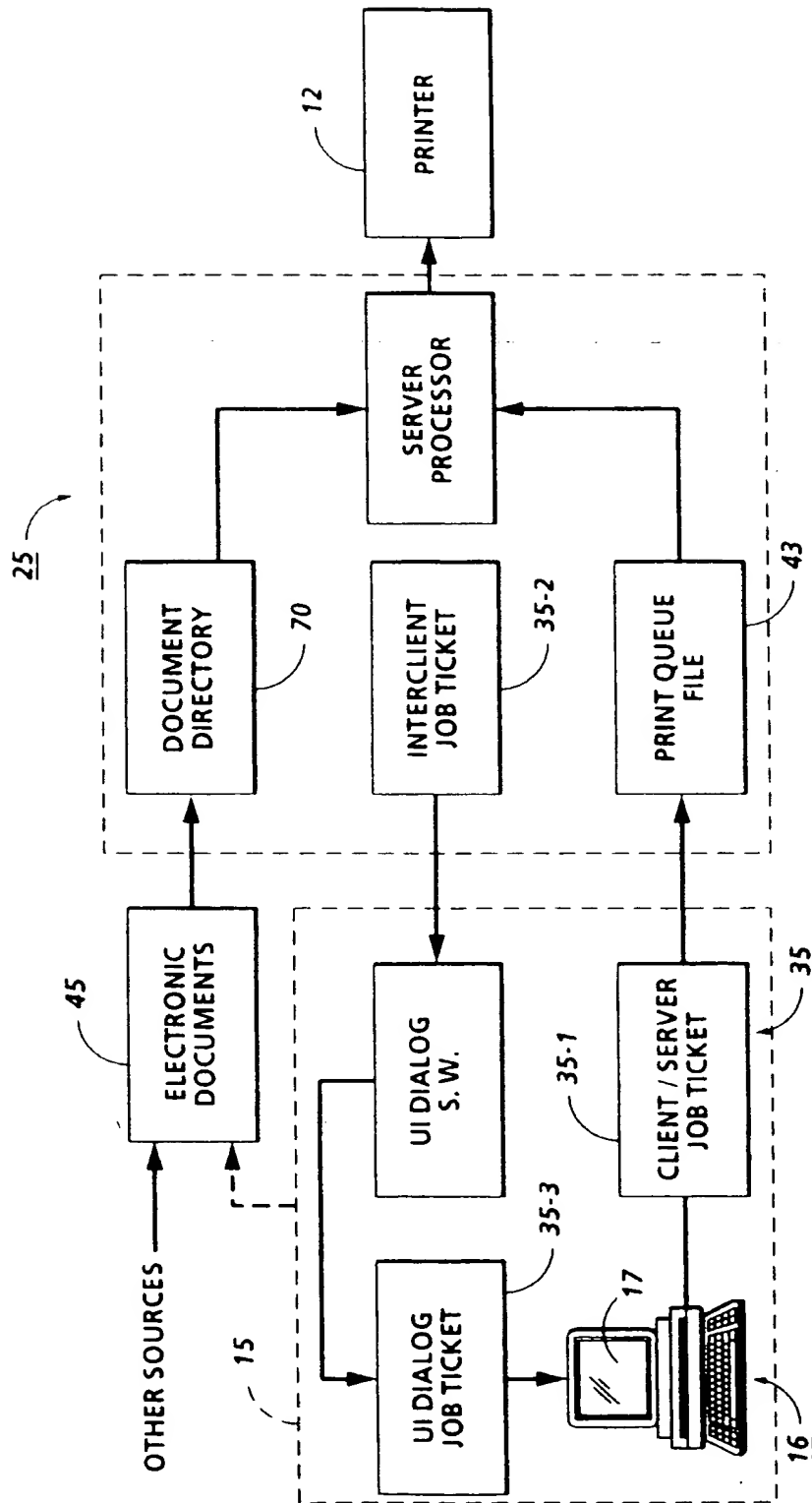


FIG. 2

35-1**Typical ASCII Job Ticket**

```
%XRXbegin:      1.31
%XRXd disposition: PRINT
%XRXsenderName:
%XRXtitle:       PostScript File
%XRXcopyCount:   1
%XRXpaperType-size: 216 279
%XRXdocumentPaperColors: white
%XRXpaperType-opacity: opaque
%XRXpaperType-preFinish: Plain 0 0
%XRXrecipientName:
%XRXrequirements: simplex
%XRXsignature:   FALSE
%XRXsourceFile:   ...
%XRXdeleteSource: FALSE
%XRXxlImageShift: 5
%XRXylImageShift: 0
%XRXend
```

FIG. 3

35-2

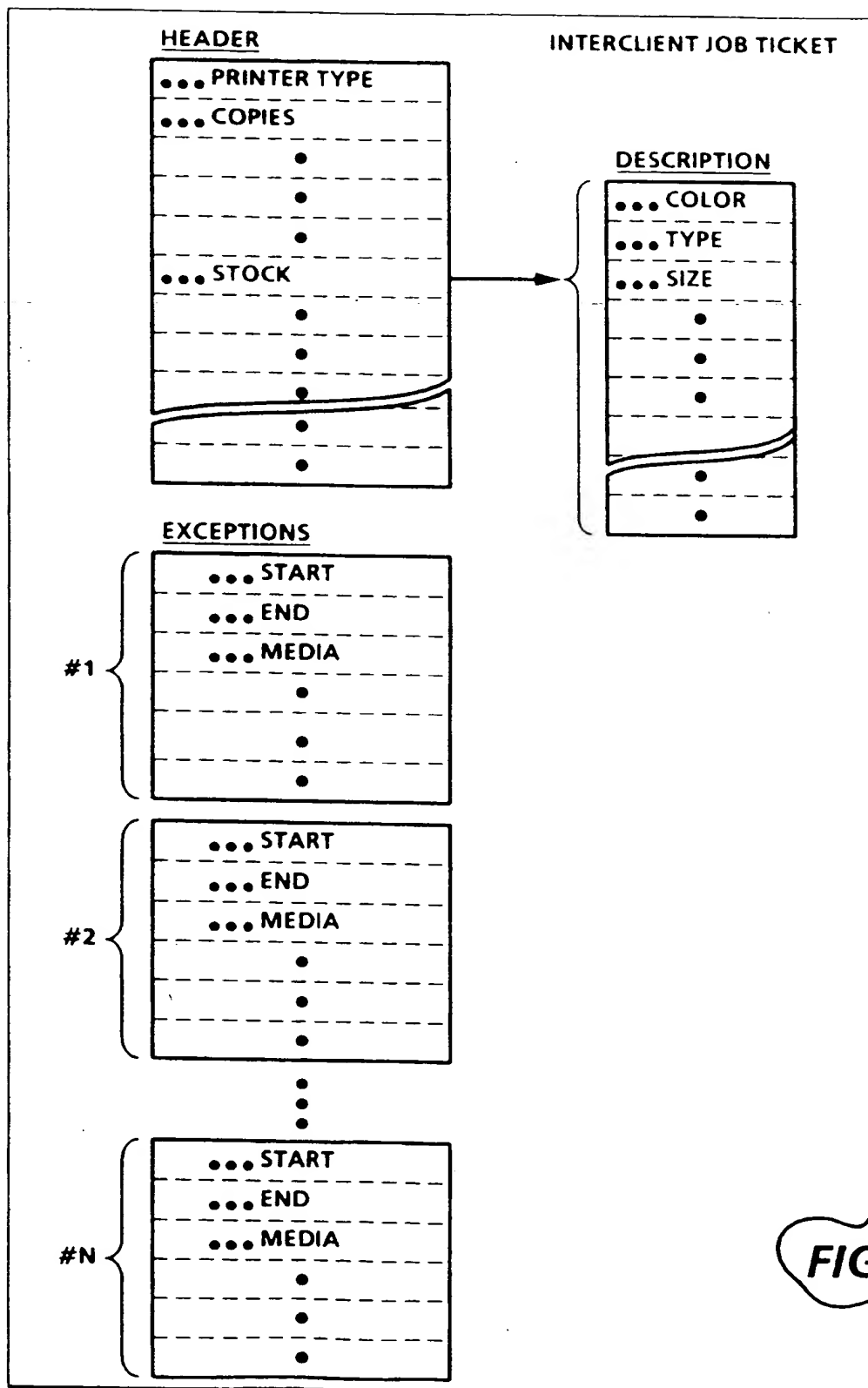


FIG. 4

JOB PROGRAM

Ready To Print

Standard Ticket

Restore Defaults

Interrupt

Close

Job Level

| | |
|---|--|
| Job Identification: 1 DEFAULT | Covers: <input checked="" type="checkbox"/> None |
| Destination: Print & Delete | |
| Quantity: 1 | |
| Output: Stacker Collated | |
| Page Numbering: Off | |

Page Level

| | |
|---|----------------------------|
| Document Description: 8.5 x 11.0 Standard | Crop Off |
| Paper Stock: 8.5 x 11.0 Standard White | Window: Off |
| Sides & Orientation: 1 + 1 | Image Shift: Off |
| Reduce / Enlarge: 100% | Merge: Off |
| Image Quality: Standard Sharpness On | |

Saved Tickets

Job Separators

Printer Options

Stop Scan

Stop Print

Job Supplement

Start Scan

17

FIG. 5

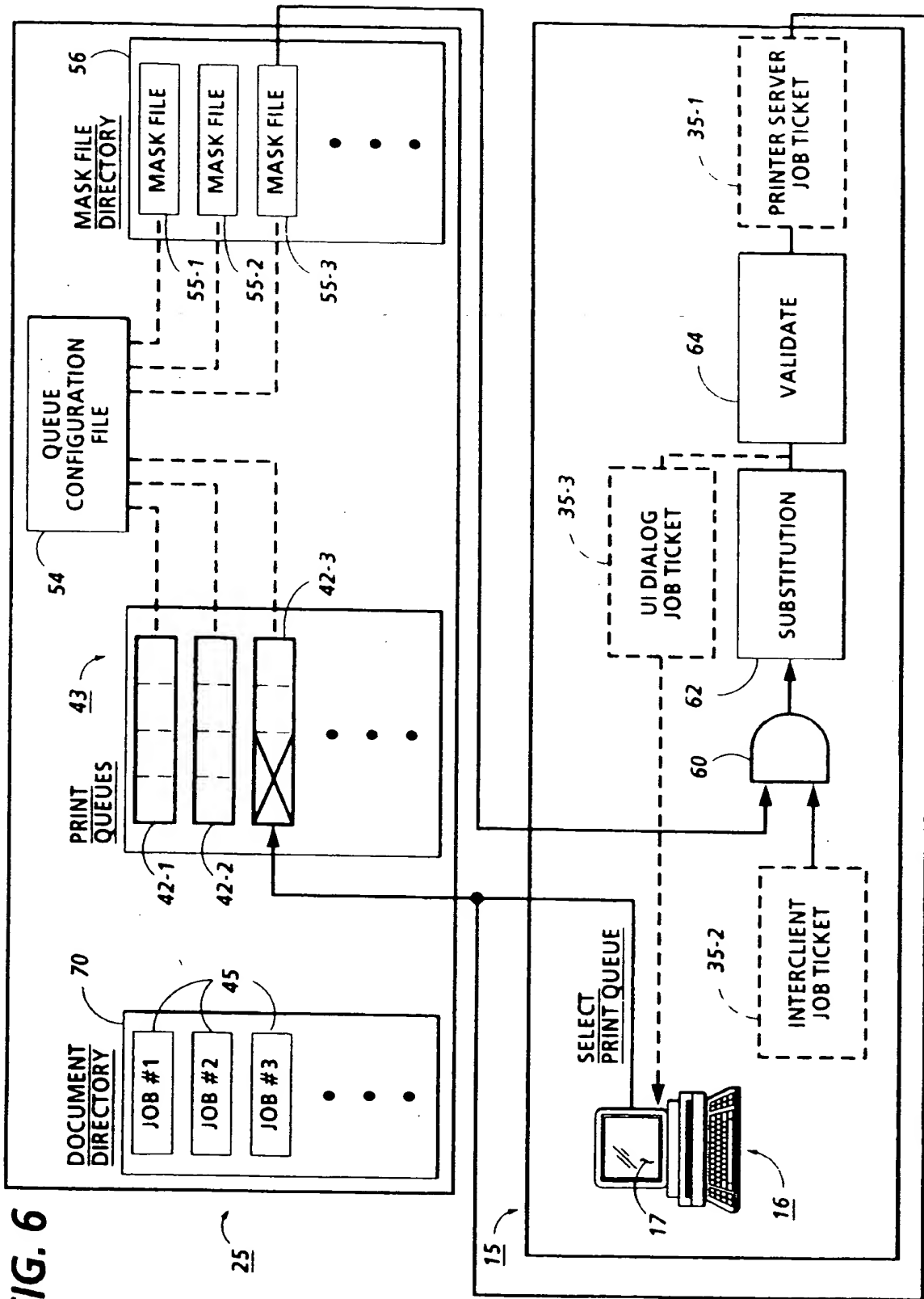


FIG. 7

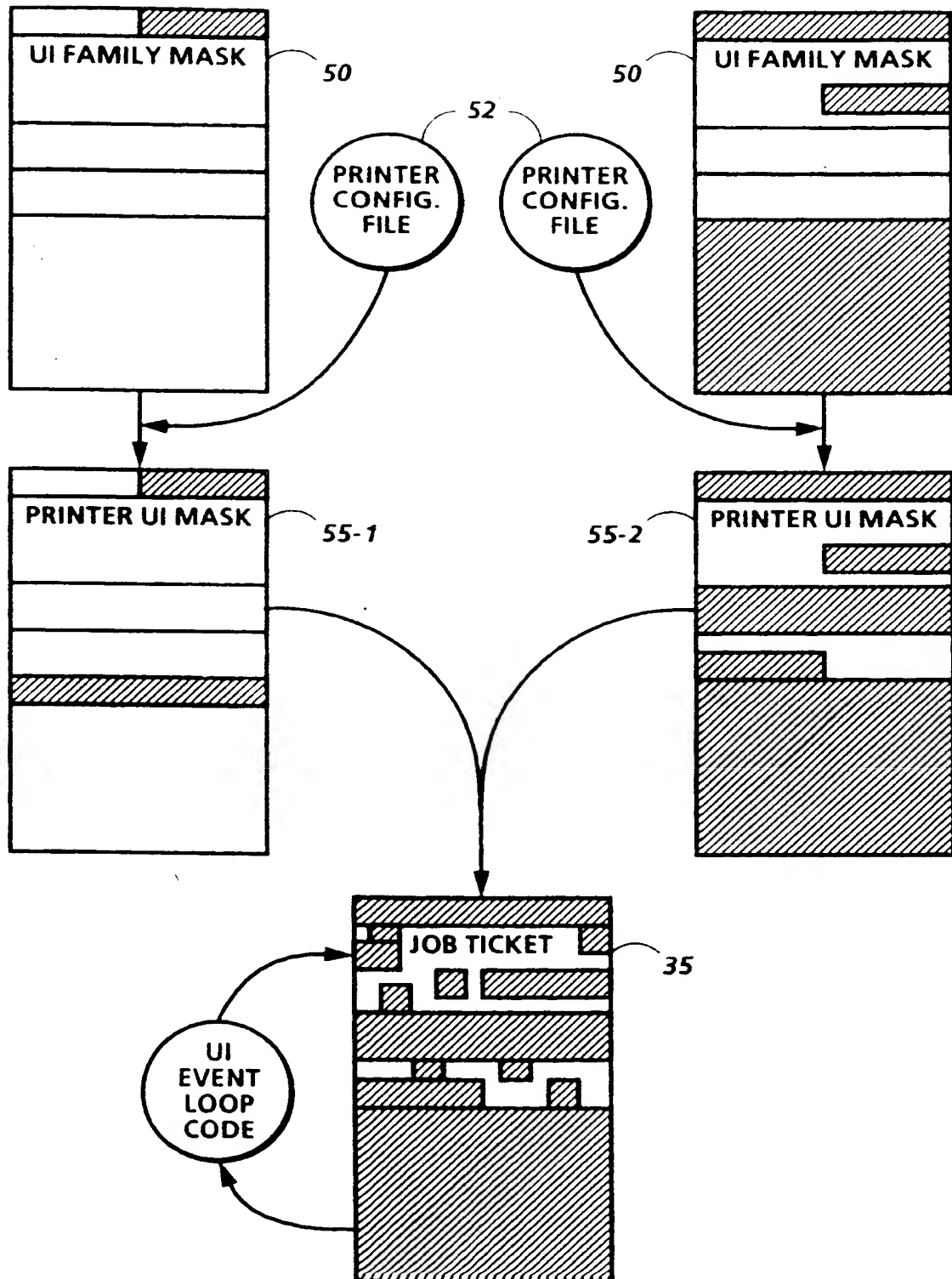
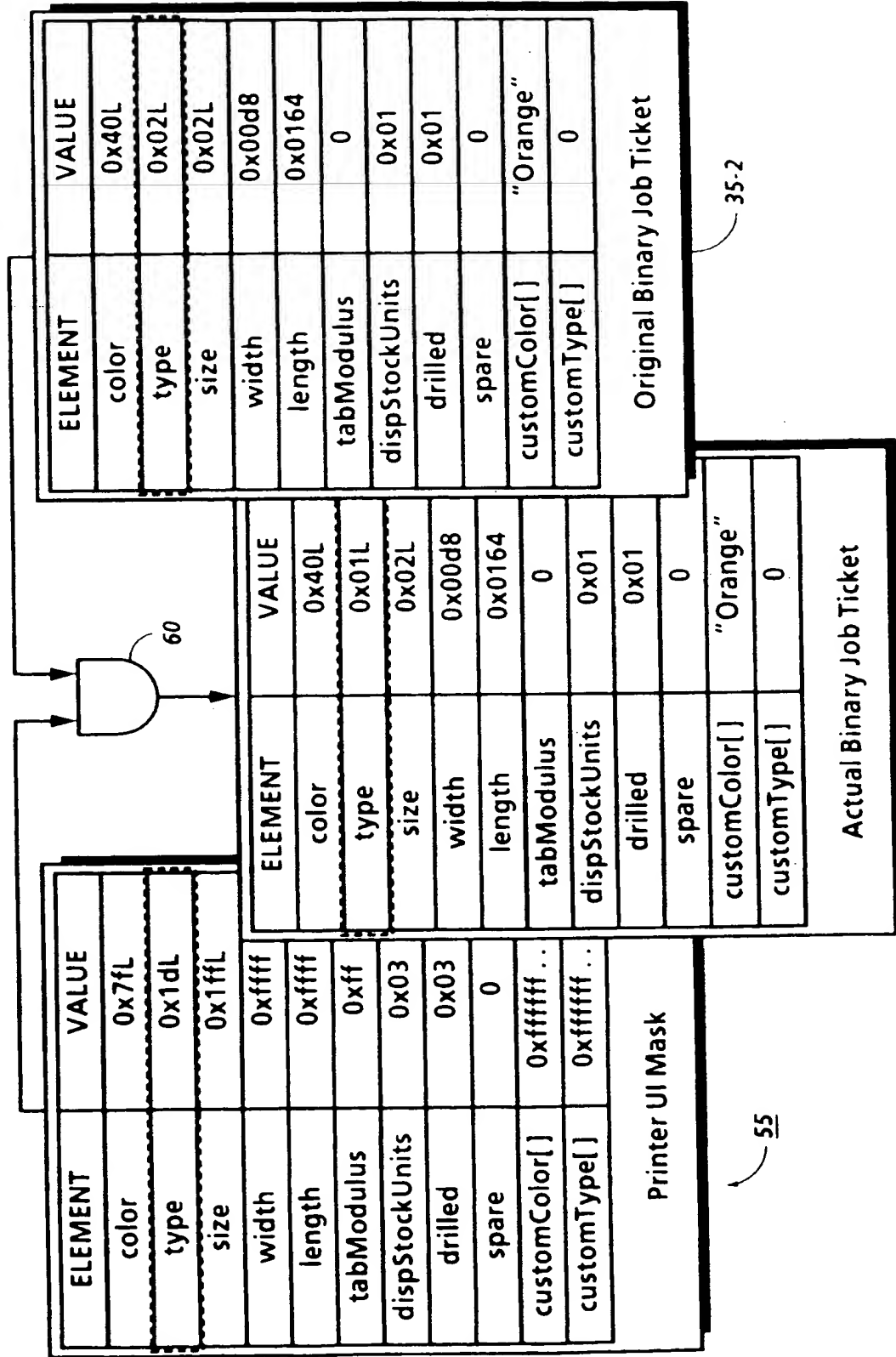


FIG. 8



THIS PAGE BLANK (USPTO)